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EXAMINER	
PATEL, KINARI M	

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2654	18

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/588,629	JIMENEZ FELSTROM ET AL.	
	Examiner	Art Unit	
	Kinari Patel	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *22-49* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *22-24,26-30,36-38 and 40-44* is/are rejected.

7)☒ Claim(s) *25,31-35,39 and 45-49* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 June 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 22, 23, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bridle et al. (BG 2137791 A) in view of Nakadai et al (US Patent 5,732,394).

As per claim 22, Bridle et al. disclose a speech recognition system, comprising:

a spectral distance calculator (Page 1, Col. 1, Ln. 4-5) including:

a calculator for performing spectral distance calculation comparing an input spectrum (Page 1, Ln. 7) of an input signal in the presence of a first known noise signal used to perform a function unrelated to speech recognition and a reference spectrum (Page 1, Ln. 7: the interfering noise may be a known noise such a intrucive sounds of short duration such as a door slamming);

a memory means for pre-storing one or more noise spectrums of one or more known noise signals including the first known noise signal (Page 1, Ln. 51, Figure 3: the template noise spectrum estimate is inherently stored in memory), and

masking circuitry for masking the spectral distance between the input spectrum (Page 1, Col. 1, Ln. 48-49) and the reference spectrum (Page 1, Col. 1, Ln. 50-51) using the pre-stored noise spectrum of the first known noise signal.

However, Bridle et al. fail to teach:

a selector for selecting a reference spectrum minimizing a spectral distance between the input spectrum and the reference spectrum. The aforementioned feature is well known in the art as taught by Nakadai et al. Nakadai et al. teach a word recognition method that performs pattern matching between unknown speech patterns and multiple reference templates, and detects a reference template that provides the smallest distance measure detected between the unknown speech pattern and the unknown template (Abstract, Col. 1, Ln. 63-67 and Col. 2, Ln. 1-9).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the speech recognition system of Bridle et al. with the feature of Nakadai et al. for the purpose of minimizing the amount of error in the speech recognition system.

As per claim 23, Bridle et al. as modified by Nakadai et al. disclose all the limitations of a speech recognition system according to claim 22. Bridle et al. further teach the system according to claim 22 wherein the calculator is configured to assigning the spectral distance between the input spectrum and the reference spectrum a zero value for each frequency of the input speech spectra which is due to noise (Page 2, Ln. 63-64: the statement, "instead of assigning a zero value which denotes a perfect match..." implies that the value could be set to zero to obtain a perfect match).

As per claim 26, Bridle et al. as modified by Nakadai et al. disclose all the limitations of a speech recognition system according to claim 22. Bridle et al. further teach the system of claim 22 wherein the spectral distance is the sum of the spectral distance calculations for a number of samples discerning the reference spectra from each other (Page 3, Ln 10-11).

3. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bridle et al. (GB 2137791 A) in view of Nakadai et al. (US Patent 5,732,394) as applied to claim 22 above, and further in view of Sedgwick et al. (EP 0240329 A2).

As per claim 24, Bridle et al. as modified by Nakadai et al. disclose all the limitations of a speech recognition system of claim 22. However, Bridle et al. fails to teach a spectral distance calculator wherein the noise has a lower level than the input spectrum.

Calculating spectral distances wherein the noise has a lower level than the input spectrum is well known in the art as evidenced by Sedgwick et al. Sedgwick et al. disclose signal levels representative of example sounds in regions where the signal is above a noise level (Page 5, Ln. 46-47). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the spectral distance calculator of Bridle et al. with wherein said noise has a lower level than the input spectrum, as taught by Sedgwick et al., because one of ordinary skill in the art would readily know that using a noise level lower than the input spectrum would allow the recognition of speech in levels of noise that a present in real situations, for example, in situations where background noise is present.

4. Claims 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bridle et al. (GB 2137791 A) and Nakadai et al. (US Patent No. 5,732,394) as applied to claim 22 above, and further in view of Nordwall (PCT/SE98/01292), and Martensson (US Patent No. 5,703,931).

As per claim 27, Bridle et al. as modified by Nakadai et al. disclose all the limitations of the speech recognition system of claim 22. However, Bridle et al. fail to disclose a mobile telephone including a speech recognition system.

A mobile telephone including a speech recognition system is well known in the art as evidenced by Nordwall. Nordwall discloses a mobile telephone (Figure 1) including speech recognition means (Page 9, Ln. 28-30).

Bridle et al. further fail to teach a mobile telephone comprising call answering circuitry operatively connected to a speech recognition system and responsive to one or more speech answering commands and each forming an input spectrum.

A mobile telephone comprising call answering circuitry operatively connected to a speech recognition system and responsive to one or more speech answering commands and each forming an input spectrum is well known in the art as evidenced by Martensson et al. Martensson et al. disclose a portable telephone that the user can answer by talking or shouting to it (Abstract; Col. 5, Ln. 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the speech recognition system of claim 27 to include a mobile phone comprising call answering circuitry operatively connected to said speech recognition system and responsive to one or more speech answering commands each forming an input

spectrum because one of ordinary skill in the art would readily know that the mobile phone as taught by Nordwall and Martensson et al. would facilitate the operability of a mobile phone by the user, for example, by allowing the user to quickly answer a mobile phone without physically picking up the phone, as taught by Martensson et al. (Abstract).

As per claim 28, Bridle et al. as modified by Nakadai et al. and further modified by Nordwall and Martensson above disclose all the limitations of the mobile telephone according to claim 27. However, Bridle et al. fail to disclose a mobile telephone wherein the call answering circuitry is responsive to an accept call command for accepting a call.

Call answering circuitry responsive to an accept call command for accepting a call is well known in the art as taught by Martensson. Martensson teaches a user answering an incoming call very quickly before the system times-out the call by talking or shouting to it even when the telephone is in a relatively inaccessible location (Abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mobile telephone of Bridle et al. wherein call answering circuitry is responsive to an accept call command for accepting a call because one of ordinary skill in the art would readily know that the call answering circuitry of Martensson would facilitate the operability of a mobile phone by the user, for example, by allowing the user to quickly answer a mobile phone without physically picking up the phone.

As per claim 29, Bridle et al. as modified by Nakadai et al. and further modified by Nordwall and Martensson above disclose all the limitations of the mobile telephone according to

claim 27. However. Bridle et al. fail to disclose a mobile telephone wherein the call answering circuitry is responsive to a reject call command for rejecting a call. A mobile telephone wherein the call answering circuitry is responsive to a reject call command for rejecting a call is well known in the art as evidenced by Martensson and Nordwall.

Martensson teaches a user answering an incoming call very quickly before the system times-out the call by talking or shouting to it even when the telephone is in a relatively inaccessible location (Abstract). It easily follows that a user can talk at the phone to signal rejecting the call instead of accepting the call. As long as the voice recognition system is in place, any number of commands can be used to operative different functionalities of the mobile phone.

Nordwall further discloses command words that are used to achieve recognition within voice recognition algorithms (Page 10, Ln. 3-4). One of the command words may be "reject," for example.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mobile telephone of Bridle et al. wherein the call answering circuitry is responsive to a reject call command for rejecting a call because one of ordinary skill in the art at the time of the invention would readily know that the call answering circuitry of Martensson and Nordwall would facilitate the operability of a mobile phone by the user, for example, by allowing the user to quickly disconnect a mobile phone call without physically picking up the phone and pushing a button on the phone to end the call.

As per claim 30, Bridle et al. as modified by Nakadai et al. and further modified by Nordwall and Martensson above disclose all the limitations of the mobile telephone. However, Bridle et al. fail to disclose a mobile telephone wherein the call answering circuitry is responsive to a forward call command for forwarding a call. A mobile telephone wherein the call answering circuitry is responsive to a forward call command for forwarding a call is well known in the art as evidenced by Martensson.

Martensson teaches a user answering an incoming call very quickly before the system times-out the call by talking or shouting to it even when the telephone is in a relatively inaccessible location (Abstract). It easily follows that a user can talk at the phone to signal forwarding the call instead of accepting the call. As long as the voice recognition system is in place, any number of commands can be used to operative different functionalities of the mobile phone.

Nordwall further disclose command words that are used to achieve recognition within voice recognition algorithms (Page 10, lines 3-4). One of the command words may be, "forward," for example.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mobile telephone of Bridle et al. wherein the call answering circuitry is responsive to a forward call command for forwarding a call because one of ordinary skill in the art at the time of the invention would readily recognize that the call answering circuitry of Martensson and Nordwall would facilitate the operability of a mobile phone by the user, for example, by allowing the user to quickly call forward a mobile phone call without physically picking up the phone and pushing a series of buttons on the phone to forward the call.

As to claims 36-38 and 40-44, they are method claims corresponding to claims 22-24 and 40-44 respectively, and are therefore rejected for the same reasons set for the in the rejections of claims 22-23 and 40-44, above.

Allowable Subject Matter

5. Claims 25, 31-35, 39, and 45-49 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As per claims 25 and 39, the prior art taken alone or in combination fail to disclose a speech recognition system according to claim 22, wherein the spectral distance calculation includes calculating to the following expression for spectral distance D_n:

$$D_n = \sum A_i \, |R_n(f_i) - S_n(f_i)|,$$

where $R_n(f_i)$ is the reference spectrum, $S_n(f_i)$ is the input signal spectrum, and A_i is equal to zero if a frequency f_i of the input signal is due to any known noise and A_i is unity if no noise is present at the frequency f_i.

As per claims 31 and 45, the prior art taken alone or in combination fail to disclose the speech recognition system of claim 22, wherein the first known noise signal is a periodic signal with a repeating pattern used to indicate a message.

As per claims 32 and 46, the prior art taken alone or in combination fail to disclose the speech recognition system of claim 22, wherein the first known noise signal is a ring signal used to indicate a message.

As per claims 33 and 47, the prior art taken alone or in combination fail to disclose the speech recognition system of claim 22, wherein the first known noise signal is a melody or a buzzer signal used to indicate a message.

As per claims 34 and 48, the prior art taken alone or in combination fail to disclose the speech recognition system of claim 22, wherein the first known noise signal is a signal output from a speaker.

As per claims 35 and 49, the prior art taken alone or in combination fail to disclose the speech recognition system of claim 22, wherein the function unrelated to speech recognition is to drive a speaker.

6. Applicant's arguments with respect to claims 22-49 have been considered but are moot in view of the new ground(s) of rejection.

Applicant states, "Examiner contends that the first known noise signal reads on 'background noise.' But this background noise is unknown. All claims explicitly require that the

noise signal be 'known.' An example of a known noise signal is a ring signal generated by a mobile phone."

However, Bridle's invention relates to spectral distance processors for comparing spectra taken from speech in the presence of background noise (Page 1, Col. 1, Ln. 4-7). Bridle teaches that the interfering noise may be intrucive sounds of short duration such as a door slamming. (Col. 1, Ln. 15-17). A ring signal is a type of intrucive sound of short duration. Bridle further teaches that spectra from unknown input words are compared with spectra from known templates or references (Col. 1, Ln. 10-12). A template noise spectrum estimate (Col. 1, Ln. 30) is obtained.

With regards to claims 22 and 36, Applicant states, "Claims 22 and 36 further recite that the first known noise signal is used to perform a function unrelated to speech recognition. There is no teaching in Bridle of using the background noise identified to perform any function – let alone a function unrelated to speech recognition."

However, Bridle teaches the example of a slamming door as a known noise signal. A slamming door performs a function unrelated to speech recognition

Applicant further states, "Bridle's template noise spectrum is an estimate of the noise – it is not actually known noise signal as recited in claims 22 and 36. Bridle also fails to disclose the advantage of reduced complexity in the software/circuitry needed to implement the claimed spectral distance calculator because the noise signal is known and not estimated."

However, Bridle et al. disclose a noise spectrum template (Page 1, Ln. 51, FIG. 3). Since the noise spectrum is template, it is a pre-stored noise signal. Moreover, an estimate of a noise

signal can come very close to the actual noise signal, so that there is no need for more sophisticated and complex software/circuitry, and can be just as reliable compared to a noise signal.

Regarding claims 23 and 37, Applicant states, "Examiner contends that Bridle teaches zeroing the spectral distance for each frequency input speech spectra which is due to noise. However, page 2, lines 63-65, specifically say, 'instead of assigning a zero value (which denotes a perfect match) to the distant for such a channel, B is giving the non-zero value D*.' Thus, Bridle teaches the opposite of what the Examiner contends – that for a noise frequency, the spectral distance is given a non-zero value."

However, the statement, "instead of assigning a zero value which denotes a perfect match..." implies that the value could be set to zero to obtain a perfect match.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent 5,012,519 to Adlersberg et al. with respect to noise reduction

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kinari Patel whose telephone number is 703-305-8487. The examiner can normally be reached on 9 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on 703-305-9645. .The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

kp

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SUPERVISORY PATENT EXAMINER